Study of Portal vein Doppler indices and other noninvasive markers as predictors of esophageal varices in cirrhotic patients

Abstract :

Introduction :

Portal hypertension commonly accompanies liver cirrhosis. The development of esophageal varices (EV) is one of the major complications of portal hypertension. The prevalence of EV in patients with liver cirrhosis ranges from 60% to 80%. The risk of bleeding from these varices is associated with the severity of the liver disease and the size of varices, which are the most important predictors of bleeding. Large EVs (LEVs) are more likely to bleed than small EVs (SEVs) due to high variceal wall tension. Guildlines recommend that all cirrhotic patients should be screened for the presence of EV when liver cirrhosis is diagnosed. Upper gastrointestinal endoscopy, which is the most common and accurate procedure for evaluation of varices, is at times inconvenient for patients and not cost effective. Investigators have attempted to identify characteristics that '**noninvasively'** predict the presence of varices. These studies have shown that biochemical, clinical, and ultrasonographic parameters alone or together have good predictive value for noninvasively assessing the presence of EV.

Aim of the study:

1.To evaluate portal hypertension parameters in liver cirrhosis by using Doppler ultrasound. 2.To evaluate other non-invasive parameters in predicting esophageal varices. 3. To correlate portal hypertension parameters in predicting Esophageal varices and upper GI bleed from esophageal varices.

Materials and Methods :

99 Cirrhotic patients registered in liver clinic (both old and new patients), Dept. of medical gastroenterolgy, Govt. Stanley medical college were enrolled in this study. The study period from April 2010 to February 2010. Their clinical presentation, Child-Pugh status, co-morbid conditions, baseline blood parameters, liver function test, etiology and endoscopic grading of varices will be noted. All patients will be subjected to Doppler evaluation of portal system including portal venous velocity, portal vein diameter, portal vein cross sectional area, the pulsatility and resistive index of hepatic, splenic arteries, spleen size were determined. Other indices like Liver vascular index, congestion index, portal hypertensive index and presence of porto-systemic collaterals also noted. Platelet/spleen ratio, AST/platelet ratio were calculated. The results were analysed and compared between patients without varices and with small and large varices.

Results :

The most common etiology of cirrhosis in this part of country is Alcohol related liver disease (29%), followed by cryptogenic and Hepatitis B related liver disease (28% & 21% respectively). Non-invasive parameters like Platelet count (114578 in patients without varices vs. 78113 in patients with large varices, P=0.049), Prothrombin time (16.53±4.3 vs. 18.18±4.5, P=0.030), Platelet count/spleen diameter ratio (957 vs. 627, P=0.011) predicted the presence of large esophageal varices. Among the Colour Doppler Ultrasound study parameters, the Portal vein mean velocity (15.44±4.63 vs. 11.91±3.97, P=0.019), Liver vascular index (14.38±5.56 vs. 9.38±4.01, P=0.001), Spleen size>16.2 cm (13.34±4.20 vs.16.29±3.42, P=0.05) predicted the presence of large esophageal varices, increasing the risk for upper gastrointestinal bleeding. Other non-invasive parameters like CTP score, MELD, AST/Platelet ratio, Bilirubin, and Doppler parameters like portal vein diameter, hepatic artery resistive & pulsatility index, splenic artery resistive index, congestive index, portal hypertensive index did not predict the presence of either small or large varices.

Conclusion :

Results of our study indicate that non-invasive tools like platelet count, prothrombin time, platelet/spleen diameter ratio, spleen size >16.2 cm, and

Doppler parameters like portal vein velocity, liver vascular index are predictors of presence of large esophageal varices.

Key words:

Cirrhosis, Portal hypertension, Esophageal varices, Noninvasive parameters, hepatic vessel Doppler indices, Platelet – spleen diameter ratio.